

# Lewis & Clark Station 2

## Reciprocating Internal Combustion Engine (RICE)

### Engineering and Design Project Profile



**Client:** Montana-Dakota Utilities Co.

**Project Name:** Lewis & Clark RICE Project

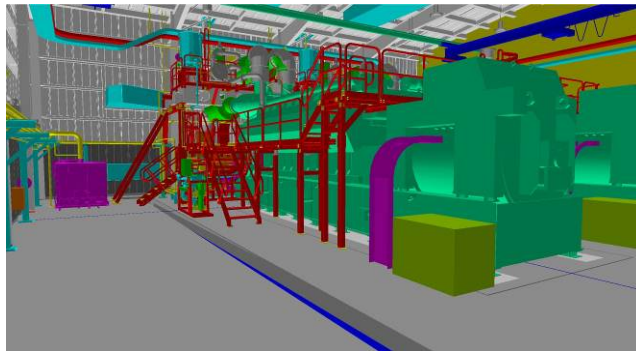
**Location:** Sidney, Montana

**RICE Supplier:** Wärtsilä

**RICE Model:** 20V34SG

**RICE Size:** 18 MW (2x9 MW)

**Fuel:** Natural gas



#### Schedule Milestones:

- **Engineering studies and technology selection** June 2014
- **Award RICE contract** October 2014
- **Start construction** March 2015
- **RICE commercial operation** Q1 2016

#### Description:

In June 2014, Sargent & Lundy was contracted by Montana-Dakota Utilities Co. (MDU) to provide engineering services to support the development of a new natural gas-fired Reciprocating Internal Combustion Engine (RICE) generation facility at the Lewis & Clark Station in Sidney, Montana. Lewis & Clark 2 consists of two 9-MW RICE units that will be placed into commercial operation in Q1 2016. The new facility is designed for the extremely cold Montana winters, with a design temperature of -40°F.

Sargent & Lundy's scope of services included the following:

- **Technology Selection Support.** Sargent & Lundy performed a screening study that considered various technical parameters, such as output, heat rate, turndown, startup/shutdown emissions, etc., as well as other project-specific parameters, such as capital costs, lead times, and North American installation base. MDU considered the results of this study in their selection of the RICE equipment supplier.
- **Development of Conceptual Design.** We worked closely with MDU to develop a conceptual design of the new RICE facility. As part of this work, we developed site plot plans and general arrangement drawings to not only locate the RICE units and balance-of-plant (BOP) equipment on site, but to also

accommodate several key items for the overall project. These items included, but were not limited to, material delivery, construction access, constructibility, noise, emissions, site cut and fill and access for operations and maintenance, proximity to existing systems (natural gas, transmission and distribution, fire protection, utilities, etc.). During this phase of the project, a capital cost estimate, project schedule, and supporting functional drawings (P&IDs, electrical single-lines, etc.) were also developed.

- **Permitting Support.** Sargent & Lundy provided MDU with information to support their preparation of the air permit application (equipment locations, equipment layout, stack heights, emission estimates, and stack gas parameters). We also identified other non-air quality permits potentially required for the project (storm water and erosion control permits, encroachment and ROW permits, and local building permits). Sargent & Lundy provided ongoing permit support in responding to technical questions from permitting agencies.
- **Detailed Engineering, Design, and Procurement.** We performed the complete project management, administration, procurement, and detailed engineering and design services for BOP items. This included preparing and administering complete specification packages for BOP equipment and construction services. The major equipment—engines, auxiliaries, selective catalytic reduction system, and stack—are provided by Wärtsilä North America. Other major features in the design include a cold-weather package to support engine combustion during low ambient temperature conditions, and sound attenuation provisions incorporated into the overall building design. Our detailed design included mechanical/electrical process and BOP interconnects, civil works, transmission and distribution, and controls interface. To support MDU’s electrical power needs, the detailed engineering/design and procurement were performed in less than 10 months.
- **Construction Management and Commissioning.** Sargent & Lundy is also providing construction and commissioning support services for the project. Our team consists of construction management and specialists providing civil/structural, electrical/I&C, and mechanical expertise to support the project from construction through startup/commissioning. Our construction management and commissioning team monitors the execution of installation/construction of the equipment, and monitors the contractor’s compliance with contractual obligations, including costs, schedules, and quality. The team works closely with the installation contractor to provide support through the precommissioning, commissioning, and integrated plant testing phases of the project to place the facility components, equipment, subsystems, and systems into an initial operating state.

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